

WHAT IS CLAIMED IS:

1. A system for delivering and deploying a medical device within a patient, the system comprising:

a delivery catheter including an inner catheter member having a region for mounting the medical device thereon and an outer restraining member co-axially disposed over inner catheter member and the medical device, the outer restraining member being adapted for axial movement with respect to said inner tubular member; and

a control handle having a rotatable thumbwheel connected to a retraction mechanism, the inner catheter member having a proximal end attached to the control handle and the outer restraining member having a proximal end attached to the retraction mechanism, wherein rotation of the thumbwheel causes linear movement of the retraction mechanism to proximally retract the outer restraining member sheath to uncover the medical device while the inner catheter member remains stationary.

2. The delivery system of claim 1, wherein the inner catheter member includes a guide wire lumen extending from the proximal end of the inner catheter member to the distal end of the inner catheter member.

3. The delivery system of claim 1, further including a lock mechanism for preventing the retraction mechanism from moving proximally until the medical device is ready to be deployed.

4. The delivery system of claim 1, further including means for evacuating air from the delivery catheter.

5. The delivery system of claim 1, wherein the delivery catheter further includes an outer sheath which extends co-axially over a portion of the outer restraining member and is attached to the control handle, the outer sheath being attachable to the entry point of the patient to provide a conduit for the delivery catheter to prevent the distal end of the inner catheter member from moving distally when the outer restraining member is being retracted via the control handle.

6. The delivery system of claim 5, wherein the outer sheath is removably attached to the control handle.

7. The delivery system of claim 5, wherein the proximal end of the outer sheath is attached to a strain relief member which is removably attached to the control handle.

8. The delivery system of claim 7, wherein the strain relief member has a proximal end which includes a channel formed therein and the control handle has a distal recess formed therein and a tab-like member extending into the distal recess, the channel being adapted to receive the tab-like member to allow the strain relief member to be threadingly engaged with the control handle.

9. The delivery system of claim 8, further including a projection extending into the channel formed on the strain relief member which forms an abutting surface that prevents the tab-like member from moving past it until a rotational force is placed on the strain relief member.

10. The delivery system of claim 1, wherein the retraction mechanism includes a gear rack which is slideable within a channel formed in the control handle and a spur gear attached to the gears of the gear rack, the thumbwheel having an actuating gear attached thereto which mates with the spur gear to cause the gear rack to move linearly within the channel when the thumbwheel is rotated.

11 The delivery system of claim 10, further including stop means for preventing unintentional movement of the gear rack.

12. The delivery system of claim 11, further including means for allowing motion of the gear rack in only one direction within the channel.

13. The delivery system of claim 12, wherein the means for allowing motion of the gear rack in only one direction is a spring having an edge which contacts the distal surface of the gears forming the gear rack to prevent distal movement of the gear rack.

14. The delivery system of claim 1, wherein the control handle further includes means for allowing motion of the outer restraining member in only one direction.

15. The delivery system of claim 1, further including an anti-clotting agent placed between the outer restraining member and the inner catheter member.

16. The delivery system of claim 5, further including an anti-clotting agent placed between the outer restraining member and the outer sheath.

17. The delivery system of claim 5, wherein the outer sheath has distal portion which has a smaller inner diameter than the proximal portion of the sheath.

18. The delivery system of claim 1, wherein the medical device is a self-expanding medical device.